Fisher Labs

Gemini-3

Deep Search, Two Box Metal and Mineral Detector

Operating Manual

FISHER RESEARCH LABORATORY

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ABOUT YOUR DETECTOR

Two-box metal detectors have long been used by prospectors, geologists, treasure hunters and public utility companies to locate large, deep objects, ore vein, pipes and cables. Fisher Research Laboratory is the recognized leader in the field, in fact, they were granted the first two-box metal detector patent over 60 years ago.

You might think it would be difficult to improve on a product that has been in a constant state of development for so many years. But the fact is, the GEMINI-3 is probably the biggest leap forward in two-box design since it replaced vacuum tubes with transistors back in the 1950s.

The new GEMINI-3 goes 10 to 20 percent deeper than its predecessor. It will trace most pipes and ore veins at least 50 percent farther, and the new crystal controlled circuitry is rock stable. The old metal-rim antenna is gone and so are the hard-to-get batteries. The GEMINI-3 is easier to use, two pounds lighter, & features Voltage Controlled Oscillator (VCO), audio target response for precision pinpointing.

Your Fisher GEMINI-3 is a high quality, precision instrument engineered by the oldest and proudest name in metal detectors. Treat it right, read this instruction manual thoroughly and practice often. Who knows, with skill, patience and a little luck, you may find the BIG ONE.

Drop us a line if you have any questions, comments or exciting GEMINI-3 stories. In the meantime . . .

Happy hunting,
FISHER RESEARCH LABORATORY

BASIC THEORY OF OPERATION

The GEMINI-3 was engineered to detect conductivity changes in the earth over which it is carried. Hence, a positive response by the GEMINI-3 indicates the presence of a metal object, ore vein or mineral that is more conductive than the surrounding rock or soil.

The function of the GEMINI-3 Transmitter is to send a radio frequency (RF) signal down to a conductive object and generate an electromagnetic field around that object. When used in any of the Inductive modes, the RF signal travels through the ground to the object. When used in the Conductive Trace mode (see page 13), the signal is transmitted directly through a wire attached to an exposed portion of the object.

The function of the GEMINI-3 Receiver is to locate the object by detecting the electromagnetic field around it and responding with audio and visual signals.

DEPTH

The GEMINI-3 was designed to locate large, deep objects such as an iron chest, pipe or an ore vein. It will not detect small coin-sized objects. A quart jar full of coins, however, may be detected one-to-three feet deep. A 55-gallon drum may be detected as deep as 10 feet. A very large object, like an automobile, may be detected at 20 feet or more.

The ability of the GEMINI-3 to detect objects at various depths depends on several factors:

1. **Ground Mineralization:** The penetrating power of the GEMINI-3 is adversely affected by the presence of magnetite (a black iron oxide) and wet conductive mineral salts. For example, an object that can be detected at 15 feet in neutral ground may be detected no deeper than 5 feet in highly mineralized ground.
2. **Size and Depth of Object:** A 4-inch diameter target will produce signal 64 times stronger than a similar 1-inch diameter target at the same depth. An object 1-foot underground will produce a signal 4,000 times greater than the object 4 feet deep.
3. **Length of Time Object is Buried:** An object that has been buried for a long time may be easier to detect than a newly buried object. Rust and other oxides as well as mineralization caused by the interaction of the metal with soil chemicals are good conductors and aid detection.
4. **Shape of an Object:** Ring or looped shaped objects lying flat produce the best results. Flat or dish shaped targets are also easy to detect. Rod shaped objects, especially when scanned on end, are very difficult to detect.
5. **Operator Skill:** Probably the most important factor of all, practice over known buried targets is essential.

TRANSMITTER

Power Switch: Pull out switch turns on power.

Ground Plate Jack: Used with the optional Ground Plate Assembly for the Conductive Trace Mode.

Battery Level Meter: Gives a visual indication of battery strength. Replace batteries if below 5 on meter.

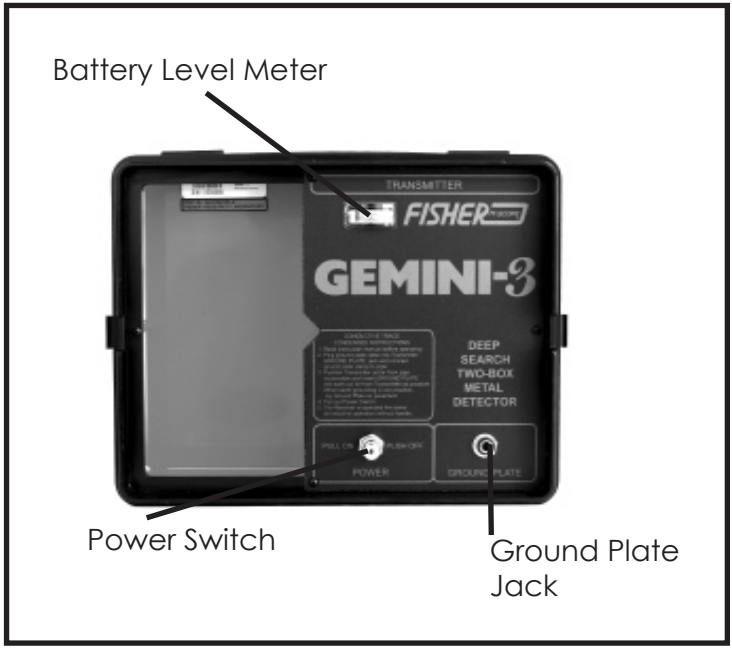

Figure 2. Transmitter

RECEIVER

Speaker: Provides audible indication of the receiver signal for balancing and detecting.

Meter: Provides visual indication of the Receiver signal response for balancing and detecting. Also used as a battery test indicator.

Sensitivity Control: Used to control sensitivity level. The circled "7" indicates the starting level used for Narrow Scan Inductive Search Mode.

Headphone Jack: Accepts stereo or monaural headphones and silences speaker when headphones are plugged in. (Stereo/mono headphones should be in "stereo" position.)

Power Switch: Pulling switch out turns on receiver.

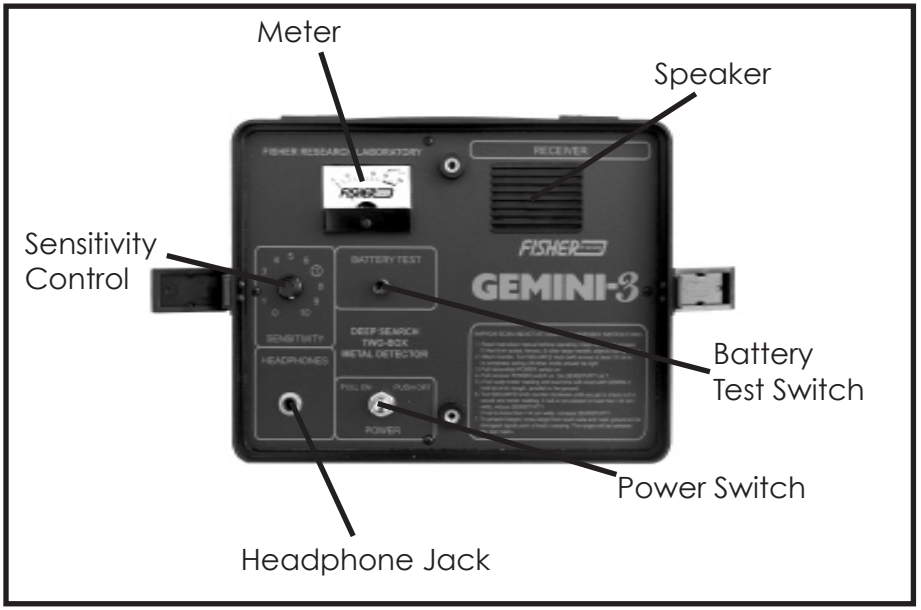

Figure 3. Receiver

Narrow Scan Inductive Search

This mode of operation is performed by a single operator using the 3-piece handle. It is the best method for locating small or short objects (chest, coin-jar, rifle, etc.). However, it is also an effective way to locate pipes, cables and ore veins.

Set Up

1. Assemble the 3-piece handle by inserting each end piece into the center handle section. Tighten the two center knobs finger tight until there is no wobble. Place the transmitter on its back and insert the end of the handle with the single brass shaft into the V-shaped slot. Turn the knob until it is finger tight and the handle is firmly in the slot.
2. Align the receiver panel holes with the upper-handle threaded shafts. Tighten the lower black knob until it is finger tight.
3. Turn the balance knob (with white arrow) until the spring is under tension (at least 10 turns).

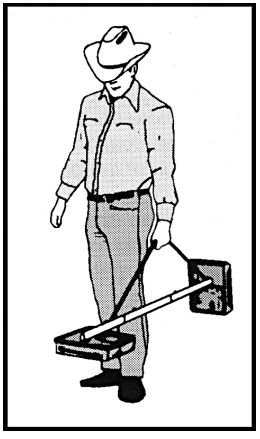

Figure 4. Narrow Scan Inductive Search

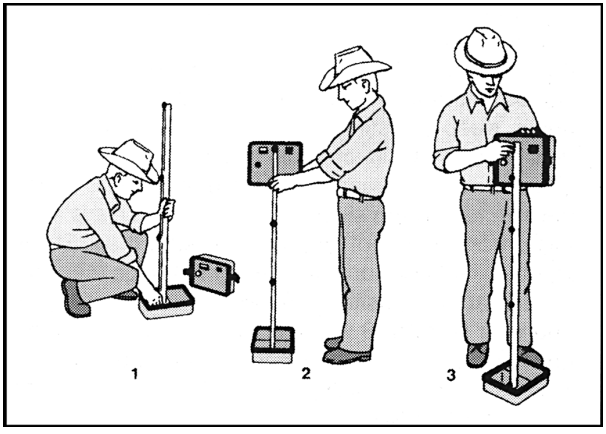

Figure 5. Assembly for Narrow Scan Inductive Search

Tuning

1. Set the transmitter:
Power: ON

2. Set the Receiver:
Power: ON
Sensitivity: 7

You should get a strong audio tone and meter indication at this point.

CAUTION: Never attempt to tune the GEMINI-3 in the presence of metal objects likes cars, metal walls, roofs or heavy metal reinforcements in any structure. Their presence will make proper balancing impossible.

3. Pick the unit up by the handle and balance it so that it is level with the ground and at normal carrying height (arm's length). Five cm higher in the front is OK. For a deeper search, attach the fully lengthened carrying strap to the eyelets at the ends of the handle (see illustration on page 9). You will need to hold the instrument at this lower level while tuning if you plan to use it lowered. On some highly mineralized ground and some asphalt, you may not be able to use it with the strap fully lengthened. You will know this during tuning if you cannot reach a silence (null). Not reaching a null can also indicate the presence of nearby metal. If this is the case, move away from the metal to balance your GEMINI-3 to the ground only.

4. Still holding the GEMINI-3 parallel to the ground, slowly turn the BALANCE knob (with arrow) on the three-piece handle counterclockwise until you get silence (null) and zero meter reading. At this point there should be no sound as you rotate the knob 1/8- to 1/4-turn further counterclockwise before reaching sound and meter reading again.

5. If you cannot null the audio or your null point is less than 1/8 turn, reduce SENSITIVITY slightly and try again.

6. If you can turn the BALANCE knob more than 1/4 turn without an increase in the sound or meter, increase SENSITIVITY slightly and try again. Keep adjusting as described until 1/4 turn of silence (null) is achieved.

7. You are ready to search when the BALANCE knob is adjusted within the 1/8- to 1/4-turn silence (null) space. This is extremely important! If this procedure is not followed correctly, the GEMINI-3 will either constantly give false audio and meter readings (sensitivity too high), or no signals at all (sensitivity too low). The sensitivity will be correctly set and your GEMINI-3 will operate properly only when a 1/4- to 1/8-turn null has been achieved. If you lower or raise your GEMINI-3, you may have to retune by making repeated adjustments to the BALANCE knob and/or the SENSITIVITY control.

Operating

1. Test your GEMINI-3 in an area you are reasonably sure is free of large buried objects. Scatter some metal objects, such as a tool box, piece of pipe.

2. With the instrument properly tuned and held in the hand or suspended by the strap, slowly walk directly toward your test object. Keep the handle as level and steady as possible while in motion or the tuning may change and you'll receive false signals and/or lose sensitivity.

3. As you approach your target, the speaker sound and meter indication will increase. They will reach maximum readings when you are directly over the conductor (target). Remember, on the GEMINI-3, unlike earlier models, the sound volume and pitch continue to increase after the meter pegs. This allows you to pinpoint without constantly readjusting the SENSITIVITY knob.

4. As you cross the target, the signal indications will begin to decrease because you are moving away. To get a precise fix on the location, make a mark at your feet when readings reach their maximum. Cross over the target, turn around and come back. Make a second mark when readings return to maximum. Your target will be centered between the two marks.

5. For even more accurate pinpointing of short objects, (i.e., a pipe, cable, etc.) approach the test object at right angles from your previous direction. Mark the ground as you did before. Your test object should be about centered between four marks.

6. To establish the path of a pipe, cable, or other long conductor, pinpoint two more locations 15-20 feet apart. From these three locations you should be able to draw a straight line (unless the pipe isn't straight). Careful additional locations may be necessary if no prints (maps of underground lines) of the area are available.

7. It may be necessary to reduce sensitivity with the SENSITIVITY knob when the pipe or cable is large and/or shallow. If the meter needle has peaked and sound is at a high level, you will want to bring the sensitivity down to see the peak of the needle at a point less than 100 as you move in half or quarter steps back and forth to get your peak reading.

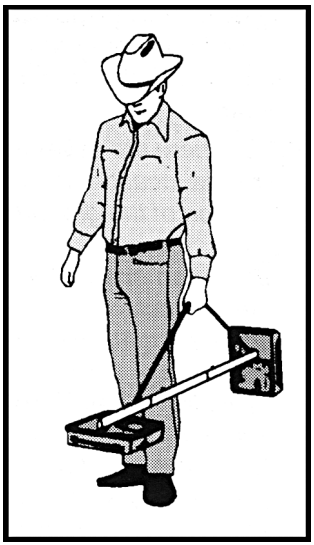

Figure 6. Handle strap: Using the handle strap increases depth; however, it may be difficult to tune the GEMINI-3 this close to highly mineralized ground.

8. If at all possible, practice over some buried targets of known size and depth.

9. There are several things to consider when locating buried objects:

a. Precise location depends on operator skill.
b. Position of the ground marks does not indicate size of the object or its path.
c. More than one metal object may cause a wider or stronger response than expected.
d. Deeper targets may not produce a signal until the operator has passed directly over them.
e. Reducing the receiver SENSITIVITY control will narrow the area between the ground marks for more precise pinpointing.
f. Small or deeply buried objects such as a cache of coins, require a tight, closely traversed search pattern. Large or shallow objects can be located successfully with a larger, more widely traversed search pattern.

Wide Scan Inductive Search

This mode of operation is the preferred method for searching a large area quickly. Two operators are required and the handle assembly is not used.

The Wide Scan Inductive Search mode is practical only when searching for ore veins, pipes or cable 40 feet long or more. If the operators are too close together, "direct air coupling" will result, meaning the receiver is detecting the Transmitter signal directly through the air instead of through a buried conductor.

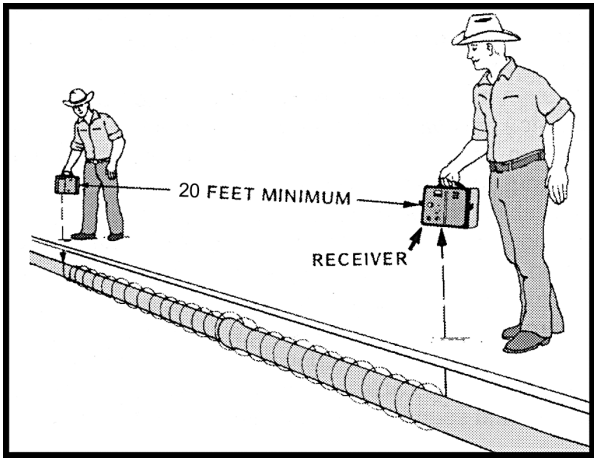

Figure 7. Wide Scan Inductive Search

Set Up

Two operators line up at least 20 feet apart, one with the receiver and one with the transmitter, parallel to the assumed direction of the buried conductor. The transmitter and receiver should be in line with each other, facing the same direction.

Tuning

1. Set the transmitter:
Power: ON
2. Set the receiver:
Power: ON
Sensitivity: ZERO

3. Slowly increase the SENSITIVITY control until the audio signal is heard, then reduce SENSITIVITY until the audio just disappears. This is the point at which "air coupling" has been eliminated.

Operating

1. Keeping the receiver and transmitter sections in line, the two operators can now walk their predetermined search pattern. The SENSITIVITY control should be checked periodically to ensure that the receiver is tuned just below the "air coupling" threshold.

2. If both operators cross the same conductive body (pipe, cable, ore vein, etc.) at approximately the same time, the receiver tone and meter will rise to indicate its presence. The receiver operator should alert the transmitter operator that they have detected a conductive object.

3. The receiver operator should then hold his position while the transmitter operator moves back and forth for the strongest receiver response. At this point, the transmitter operator should stop and place the instrument on the ground with the handle grip on top.

4. The receiver operator can then pinpoint the buried object by moving the receiver back and forth in line with the transmitter. The object should be directly beneath the point of maximum response.

5. The receiver operator may then trace the signal along the length of the unseen object as described in the Inductive Trace section (page 12).

Inductive Trace

The Inductive Trace mode is usually used to trace a long object (pipe, ore vein, etc.) that shows no exposed portions, but two starting points are known.

Set Up

Locate two points along the conductive object at least 30 feet apart as described in the Wide Scan or Narrow Scan Inductive Search sections. The transmitter and receiver should be in line with each other, both facing the same direction. The transmitter should be on the ground and the receiver should be held by the operator.

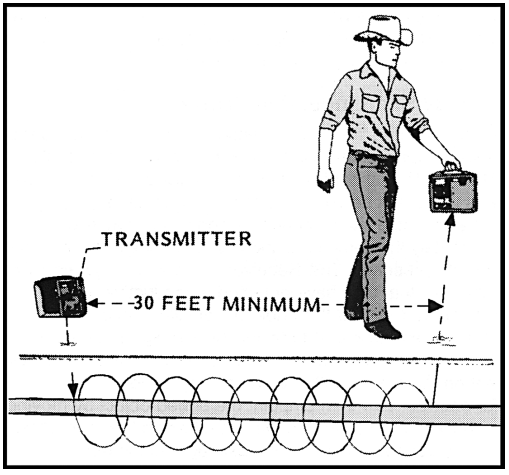

Figure 8.
Inductive Trace

Tuning

1. Set the transmitter:
Power: ON
2. Set the receiver:
Power: ON
Sensitivity: ZERO
3. Increase the receiver SENSITIVITY control until you have an audio response and at least a mid-scale meter deflection.
4. Determine that you are not direct air coupling by moving the receiver back and forth. The audio meter indications should peak over the object. No peak will be observed if the receiver is too close to the transmitter and direct air coupling is occurring.

Operating

1. Once the two starting points have been established and the receiver tuned, walk away from the transmitter in the assumed direction of the buried conductor.
2. Hold the receiver vertically to maintain a peak signal or horizontally, face up, to maintain a null or minimum signal. Either method indicates that you are over the object and tracing its path.
3. As the distance from the transmitter increases, the signal will fade. As this occurs, increase the SENSITIVITY as required.
4. When the signal becomes too weak to trace, stop and move the transmitter closer.
5. Be aware that if you are tracing a pipe, each time a "T" junction or lateral is encountered, the signal will split and weaken.

Conductive Trace

This is the best method for tracing a single pipe in the presence of other pipes. A portion of the pipe must be exposed in order to energize it by direct connection utilizing the optional Ground Plate Assembly or Ground Rod Assembly.

Set Up

1. If possible, clean the contact point of the pipe with a wire brush.
2. Connect the ground plate clamp to the contact point.
3. Plug the Ground Plate Assembly or Ground Rod Assembly into the transmitter Ground Plate Jack.
4. Set the transmitter on the ground and in an upright position as far away from the contact point as possible, at right angles to the assumed direction of the pipe or cable. Insert the Ground Plate or Ground Rod Assembly in the ground as far away from the transmitter as possible. Lay the Ground Plate flat on paved surfaces. Placing it in a puddle of water and weighing it with a rock will help conductivity.
5. Hold the receiver vertically, in line with the contact point of the pipe at least 30 feet away.

Tuning

1. Set the transmitter:
Power: ON
2. Set the receiver:
Power: ON
Sensitivity: ZERO
3. Slowly increase the SENSITIVITY control until the audio signal is heard, then reduce SENSITIVITY until the audio just disappears. This is the point at which air coupling has been eliminated.

Operating

1. Locate the buried pipe by circling the contact point, keeping the receiver in line with the contact at all times. Stay at least 30 feet from the transmitter.
2. Once the pipe has been located by a sharp increase in audio and meter signals, the pipe may be traced exactly as described in the operating section of the Inductive trace instructions.
3. Be aware that a nonconductive gasket in the pipe will terminate the RF signal from the transmitter.

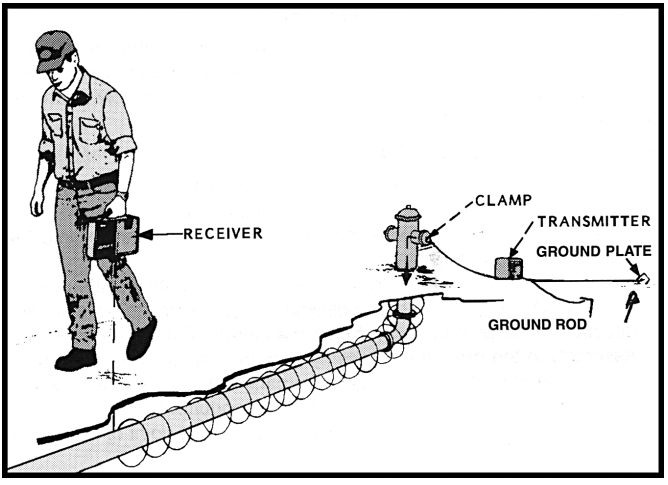

Figure 9. Conductive Trace

PROSPECTING TIPS

Mapping

When an area of high conductivity is encountered, outline and stake it by crossing and recrossing, using the Narrow Scan Inductive Search mode. It will be noted that in and near the conductive zone, a maximum indication will be received in only one definite direction when the operator stands at one point and rotates the instrument parallel to the surface of the ground. Record the meter readings as read in the maximum directions, at various points along the zones. Note the character of the overburden, outcrops and topographic features.

When the area being inductively surveyed has been completely covered and all of the conductive zones have been staked, these zones are surveyed and plotted on a map. The map should include all creek bottoms, gullies, outcrops and other physical features. The ideal map on which to plot the conductive zones is a topographic and geological map of the proper scale. In this way it is possible to correlate the zones directly with the topography and geology, and thus determine the possible reasons for the presence of the various conductive zones.

Locating Placer Deposits

A lot of prospectors have told us they would like to use a two-box for locating placer gold. In general, these deposits contain such a small amount of gold that it cannot be detected. Placer gold, however, is usually associated with a certain amount of black sand, and some placer deposits carry iron sulphide. Both of these mineral substances are definitely conductive, and may be detected by the GEMINI-3. It is through the detection of these minerals that the placer gold may be located.

Sources of Error

The most common nonproductive zones of conductivity are:

1. **Dissolved mineral salts** - Mineral salts become conductive when dissolved in water. As a result, the presence of saline water or water saturated soil high in salt content, may render the GEMINI-3 useless.
2. **Rough terrain** - In very rough terrain it may be difficult to maintain the GEMINI-3 parallel to the ground, resulting in frequent false signals.
3. **Irregularities in the overburden bedrock -** The GEMINI-3 may detect sharp changes in conductivity which are of no important geological significance.
4. **Fault zones -** Fault zones often give positive indications because they are highly fractured and usually contain concentrations of water and minerals.
5. **Alluvial deposits along creek bottoms -** Conductive deposits along creek beds usually have no economic value or importance in determining the geology.
6. **Conductive debris -** Unexpected high readings are often due to highly conductive debris near the surface such as scrap iron, tin cans, etc.
7. **Magnetite -** Heavy concentrations of magnetite will cause false signals and/or loss of penetrating power.

It is obvious from the above that every response by the GEMINI-3 does not indicate the presence of valuable ore, but rather an indication that the earth's conductivity has changed. It remains for the operator to properly interpret this data. The successful prospector will have some understanding of the ore he is seeking and of the existing geological conditions. The successful operator will also have studied that area and will know in advance what ore he is seeking and where the best opportunity exists for locating it. Under these conditions, the GEMINI-3 can provide valuable information. On the other hand, random wandering and prospecting for no ore in particular can be an expensive waste of time.

BATTERY REPLACEMENT

1. Turn either instrument (Transmitter and Receiver) over on its face and remove access plate with coin or large blade screwdriver.
2. Lift the battery pack out carefully. Turn the battery pack slightly, unsnap the battery connector and slip off the sleeve. Change all eight batteries. Slip the sleeve back on, then reattach the connector to the pack. Slip the battery pack back into its compartment and do a battery test. Refasten the access plate. Both the transmitter and receiver will work from 30 to 40 hours on a set of 8 standard quality, carbon-zinc batteries. Alkaline batteries will give substantially longer life and in cold weather will perform much better than standard carbon zinc batteries.

NOTE: *As supplied from the factory, the battery pack is surrounded by a plastic sleeve to retain the batteries during possible rough handling and shipping. As a precaution, always reinstall the sleeve after battery replacement.*

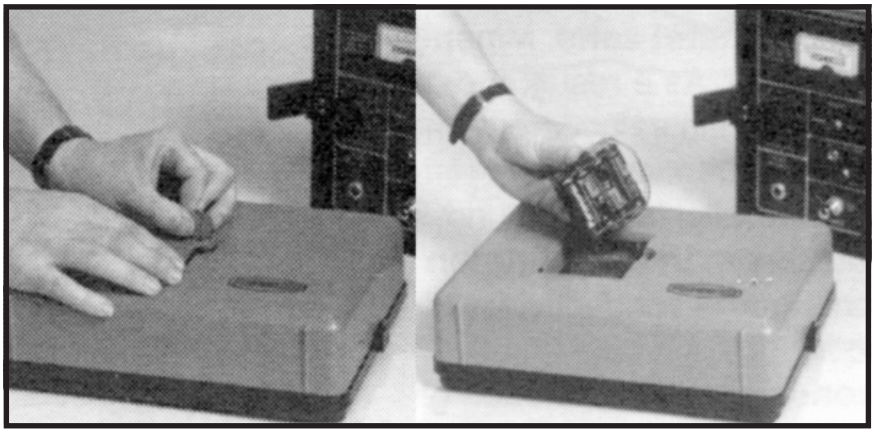

Figure 10. Changing Batteries

TREASURE HUNTERS' CODE OF ETHICS

LETS PRESERVE OUR TREASURED SPORT!

Laws governing the use of metal detectors are common in some areas. In many countries, the use of metal detectors is illegal or severely restricted. DON'T LET THIS HAPPEN IN YOUR COUNTRY!

- Always check Federal, State, County and local laws before searching.
- Respect private property and do not enter private property without the owner's permission.
- Take care to refill all holes and try not to leave any damage.
- Remove and dispose of any and all trash and litter found.
- Appreciate and protect our inheritance of natural resources, wildlife and private property.
- Act as an ambassador for the hobby, use thoughtfulness, consideration and courtesy at all times.
- Never destroy historical or archaeological treasures.
- All treasure hunters may be judged by the example you set; always conduct yourself with courtesy and consideration of others.

LET'S PRESERVE OUR TREASURED HOBBY

Where To Use Your Metal Detector In The U.S.

National Forest and Federal Lands—Metal detecting is allowed only by special permit acquired from the federal government. Each area has a district office.

Corps of Engineers, Lakes, Shorelines and Lands—Permission has been granted only on predisturbed sites, such as beaches and attached swimming areas. New Corps lakes and lands must be okayed by the main office of the Army Corps of Engineers. Each area has a district office.

State Parks and Lands—Some state parks are open to metal detecting, but some are not. Always check with the park ranger before attempting to use your detector.

Bureau of Land Management (BLM) Lands—Some areas are open for metal detecting, and some are not. Always check with the district office.

City or County Park Lands—Most are open to metal detecting unless notice is given by a sign or city ordinance. When in doubt, always check with the city's Parks and Recreation Department. Public School Grounds—Most are open to metal detecting unless notice is given by a sign, city ordinance, law enforcement official, or school employee. You should always check with the school office first.

Privately Owned Lands (Private Property)—Permission required. It is always best to have the permission in writing.

Historically Marked Lands or Sites—Metal detecting is not allowed. Don't even think about it.

SPECIFICATIONS

Dimensions[2]

Length on handle .....49 1/2 inches
Transmitter-Receiver Box Assembly
.....9 1/4 x 12 x 6 inches(23.5 x 30 x 15 cm)

Weight

Complete .....7 lbs. (3.2 k)
Transmitter .....2.4 lbs. (1.1 k)
Receiver .....2.9 lbs. (1.3 k)
Handle .....1.7 lbs. (.75 k)

Frequency

RF Search and Trace .....81.92 KHz Crystal Controlled
Audio Target Response (VCO)[3]

Operating Modes

Search
1. Narrow Scan, Inductive
2. Wide Scan, Inductive
Trace
1. Inductive
2. Conductive[4]

Target Response

Meter ..... 2 1/4 x 1 3/4 inches, Analog
Speaker .....2 1/4 inches, 100 ohm,
Moisture Proof Cone
Headphones[5] ..... 1/4 inch Jack, 8-16 ohms,
.....Stereo/Mono

Batteries

Receiver..... (8) AA 1.5V
Transmitter ..... (8) AA 1.5V
Life[2,6].....Carbon Zinc ..... 30 Hours
.....Alkaline ..... 50 Hours

Notes

1. Subject to improvement or modification without notice.
2. Approximate.
3. Voltage Controlled Oscillator. Volume and pitch both increase as target is approached for easier, more accurate pinpointing.
4. With optional ground plate assembly.
5. Optional stereo/mono headphones.
6. Use of headphones will significantly increase battery life.

Fisher Research Laboratory does not warrant suitability to specific use. Fisher Research Laboratory shall in no event be liable for any direct, incidental, consequential or indirect damages.

USING HEADPHONES

Using headphones (not supplied) improves battery life, and prevents the sounds from annoying bystanders.
It also allows you to hear subtle changes in the sound more clearly, particularly if searching in a noisy location. For safety reasons, do not use headphones near traffic or where other dangers are present. This device is to be used with interconnecting cables/headphone cables shorter than three meters.

QUALITY

Fisher detectors are renowned for their quality.
Each detector is hand crafted in the USA with pride

PERFORMANCE

Treasure Hunters worldwide rely on Fisher.
Our detectors are durable, dependable, and search deeper..

REPUTATION

Fisher produced the first patented metal detector in 1931. For over 70 years, the Fisher logo has been a mark of excellence.

5 - YEAR LIMITED WARRANTY

Fisher believes in the products we produce and backs this belief with a 5 year limited warranty.

Proof of purchase is required to make a claim under this warranty.

NOTE TO FOREIGN COUNTRY CUSTOMERS

This warranty may vary in other countries, check with your distributor for details.
Factory warranty follows the channel of distribution.
Warranty does not cover shipping costs.

SERVICE

Fisher is committed to providing you, our valued customer, with superior service. Each and every instrument is rigidly tested and carefully inspected during assembly and before shipment.
Should you have any questions or problems, contact:

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